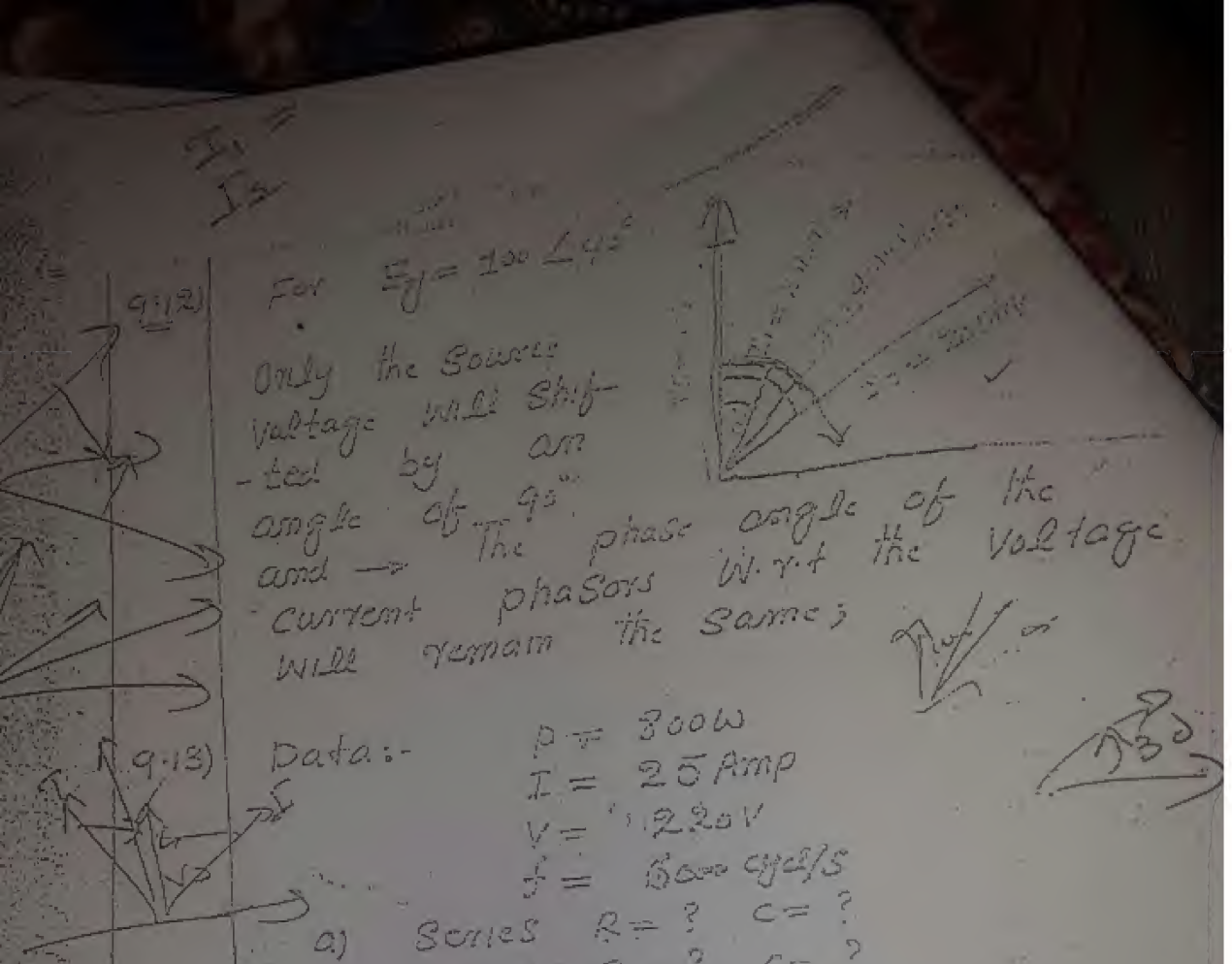


For $E_f = 100 \angle 90^\circ$

Only the source voltage will shifted by an angle of 90° and → current phasors will remain the same; The phase angle of the W.r.t the voltage

9.12)

9.13) Data:-

$P = 800W$
$I = 25\ Amp$
$V = 220V$
$f = 60\ cycles$

a) Series $R = ?$ $C = ?$
b) parallel $R = ?$ $C = ?$

Soln:- For Series;

$P = I^2R$

$\Rightarrow R = P/I^2 = 800/625$

$$\boxed{R = 1.28}$$

$V = IZ$

$\Rightarrow Z = 220/25$

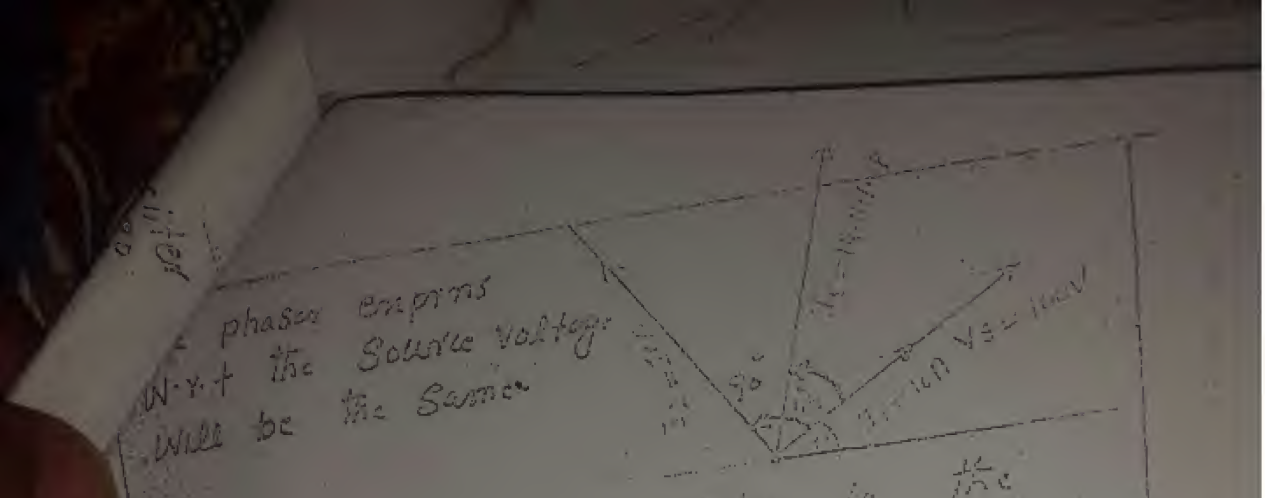
$\Rightarrow \boxed{Z = 8.8\text{-ohms}}$

$Z = \sqrt{R^2 + X_c^2}$

$X_c = \sqrt{(8.8)^2 - (1.28)^2}$

$= \sqrt{75}$

$$\boxed{X_c = 8.7}$$



phasor emprns w.r.t the source voltage will be the same.

The phasor angles relative to the +ve or reference axis are;

$\theta_1 = 30°$ for I_1

$\theta_2 = 120°$ for I_2

$\theta_s = 75°$ for I_s

Data:-

$Z_L = R + jX_L$

$Z_L = 3 + 4j \rightarrow (1)$

$Z_c = R_c - jX_c$

$Z_c = 0 - j10 \rightarrow (2)$

$V = 100V$

$f = 1000$ cycl/s

$E_g = 100 \angle 0°$

Required:-

a) $I_1 = ?$ $I_2 = ?$ $I = ?$

b)- phasor diagram.

Soln:- converting to polar form;

$Z_1 = 3 + 4j$

$\boxed{Z_1 = 5 \angle 53.1°}$

$\boxed{Z_2 = 10 \angle -90°}$

Now, $I_1 = \frac{V_S}{Z_1} = \frac{100}{5 \angle 53°} = 20 \angle -53°$